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NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL

LAMAS enjoy archery in sky-high Ladakh, a center of the India-China border dispute

- China-India Tug of War
- Hydrofoils Give Boats a Lift
- The Strange Armadillo
- Anguished Algeria
- Tuaregs—Desert Nomads INDEX, page 113

UMI

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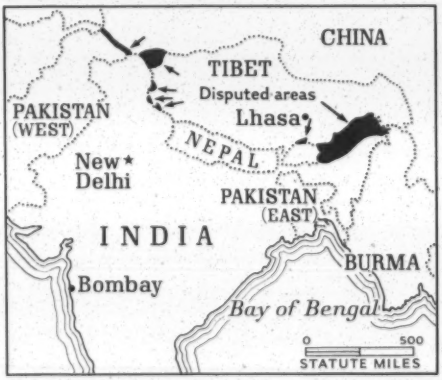
Since 1950, when the Reds seized Tibet, China's southwestern frontier has stretched 2,500 miles along the Himalayas, a region of snow-blanketed peaks, rocky plateaus, and impenetrable forests.

So remote is this "roof of the world" that in the early days of the current dispute, India required a year to discover that the Chinese Wu-je was a place they called Barahoti. Then they needed another year to locate it on the map.

Much of the area is unsurveyed. Nearly all of it is desolate. Jagged peaks in Ladakh, above, display the savage bleakness of the region.

Parts of this borderland are occupied by Nepal, Bhutan, and tiny Sikkim, all of which look to India. But the dispute simmers mostly in two Indian territories —the Ladakh portion of Kashmir and the North East Frontier Agency of Assam.



NGS MAP

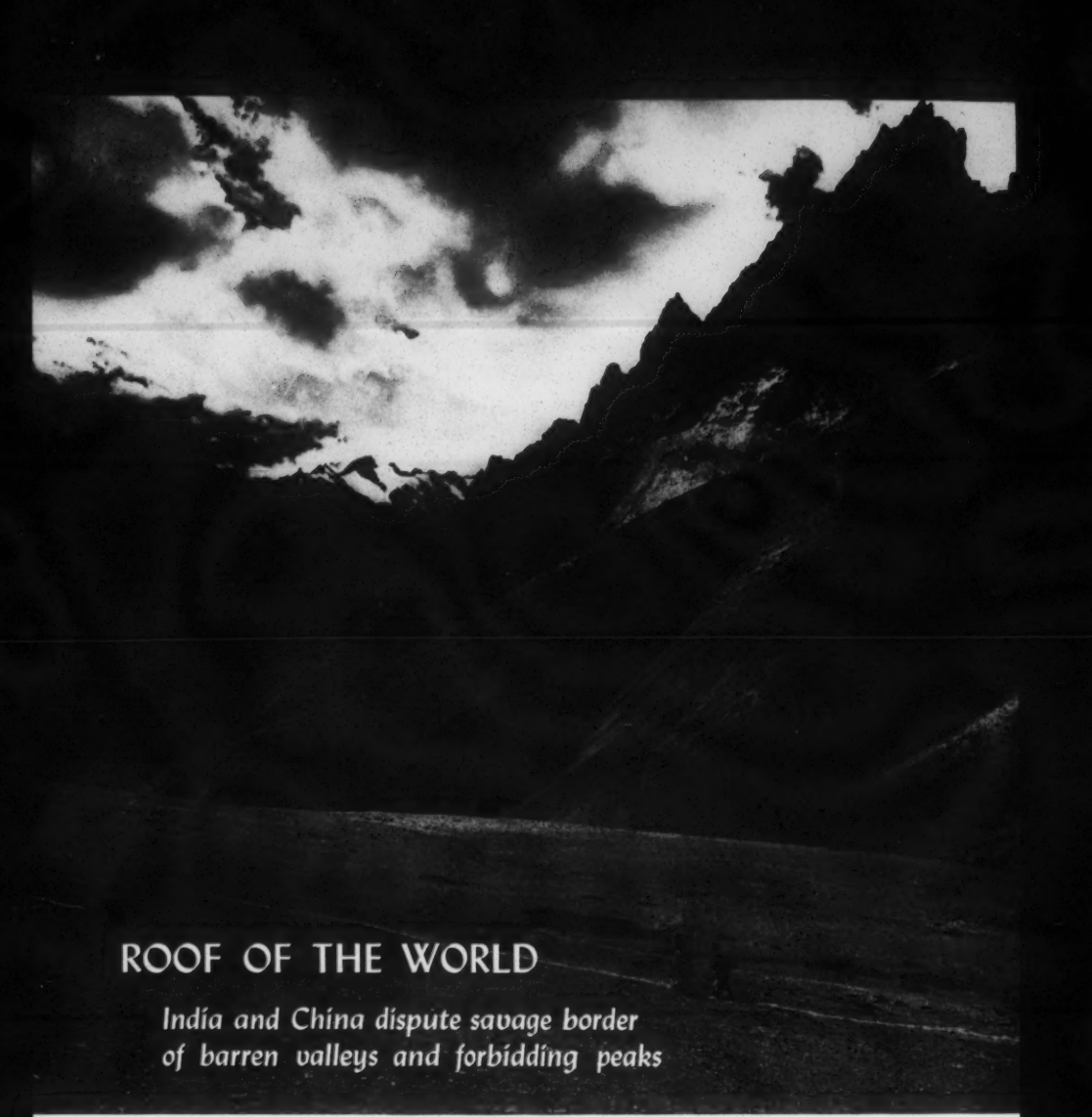
CHINA NIBBLES AT INDIA in the black areas. Largest morsels are a triangular mouthful of Ladakh and a giant bite of Assam. China also covets a bit of Bhutan (below Lhasa) and a strip of Pakistan-held territory. It absorbed Tibet in 1950.

Chinese maps indicate Chinese ownership of the eastern part of Kashmir's Ladakh. In 1913 and 1914, Foreign Secretary Sir Henry McMahon of British India met representatives of China and Tibet to define the borders between Tibet and India along the stretch from Bhutan to Burma. The 800-mile McMahon line was never accepted by the Chinese. Both Nationalist and Communist Chinese maps show a 22,000-square-mile chunk of territory south of the McMahon line as Chinese. National Geographic Society maps have always marked frontiers in both regions as undefined.

A first glance at the two cheerless bits of real estate would make one wonder what the quibbling is about. Ladakh, often called "little Tibet," is a cold and rocky wasteland on the ridgepole of the earth. Below a yak caravan arrives on top of Khardung Pass, 18,380 feet high.

LA FUGIE

UMI



ROOF OF THE WORLD

India and China dispute savage border of barren valleys and forbidding peaks

NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL

PEACE-LOVING, traditionally neutral India is fighting a map war with Red China. The Chinese Communists, in a giant land grab, have laid claim to 40,000 square miles along India's northern borders.

Chinese troops now occupy several areas India has always considered hers, and they show no signs of moving out. In two areas they have seized Indian border patrols, holding one group for five weeks. At Longju, in the North East Frontier Agency, the cold map war erupted into a hot war. In Ladakh, a part of Jammu and Kashmir, the Chinese have rammed a military road across the eastern section they claim, connecting two major Communist army bases in western Tibet and China.

Border disputes are nothing new between India and China. The current one revives an old argument between British-ruled India and pre-Communist China. It is one issue on which even the Chinese Communists and Nationalists see eye to eye.

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UMI

Infrequent pieces of irrigated land relieve the countryside. These are the habitable oases. Cold winds bluster through the valleys. The temperature at the height of summer may dip to 22 degrees while the plains of India a few hundred miles away melt under 122 degrees.

Politically Ladakh is part of Jammu and Kashmir, but only politically. Caucasian Moslems live in the lush green valleys of the rest of the state. Most of Ladakh's 200,000 people are Mongolians and Buddhists, more akin to Tibet—of which Ladakh was once a part—than to India.

They speak a Tibetan dialect, and they look to Lhasa's Dalai Lama, now in exile in India, for spiritual leadership.

Leh, the capital, is a mud town with no electricity and no running water. Although not in the disputed area, it has been hurt by recent events. Before the Chinese invaded Tibet, Leh bustled with caravans and traded briskly in tea, silk, jute, saffron, shawls, and jade bangles. Today, the bazaars are almost silent, the business from the Communist part of the world all but cut off.

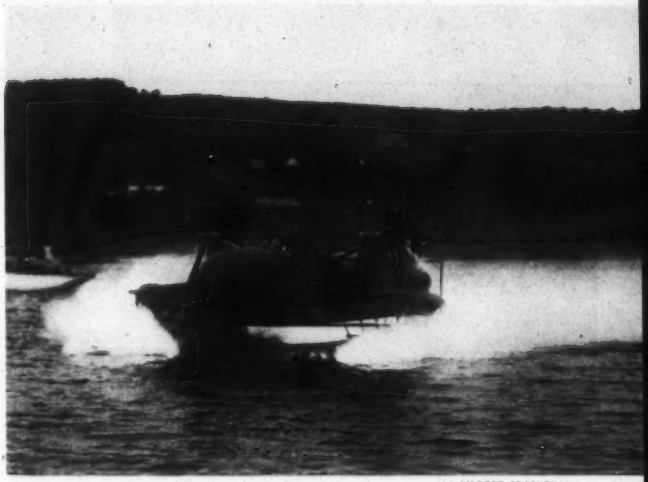
The most valuable thing in Ladakh is land that will grow food. Only about one acre in a square mile will. Most Ladakhis are poor. They glean a bare living growing grain and tending herds.

Like Ladakh, the North East Frontier Agency is remote and sky-high. Much is unsurveyed and some even unexplored. Himalayan peaks reach 20,000 feet. In some places the only routes are bridle paths. Two men above carry a bridge that will span deep river gorges. Three hundred feet long, it is made of plaited bamboo, weighs a total of 200 pounds.

F. KINGDON-WARD

The people of the region differ from the Indians of the plains. They are a race of Tibetan, Bhutanese, and other Mongolian strains, closer to the Chinese. Many wander the forests in primitive tribes, burning down trees to clear the land for a kind of farming they do with the most primitive equipment: a *dao*—a kind of dagger—and a stick.

Across the border in Tibet, the Chinese have laid 60,000 miles of highways that reach tentaclelike toward India. Chinese occupation of Ladakh and Assam, remote properties though they are, would place the Communists in position to further weaken the traditional Himalayan barrier that protects India. L.B.



GILBERT GROSVENOR

PIONEER HYDROFOIL—Alexander Graham Bell's 60-foot, five-ton *HD-4* roars across the waters of Nova Scotia's Bras d'Or Lakes. Driven by twin Liberty aircraft engines, it set a record of 62 knots (70.86 miles an hour). So advanced was Dr. Bell's design that only in recent years has the record been bested by another hydrofoil, a Navy experimental craft.

made possible the current boom. Already manufacturers are building hydrofoil runabouts to order. Hobbyists can buy do-it-yourself hydrofoil kits for their outboard motorboats. Police craft run up and down the rivers of Europe at 40 knots, leaving scarcely any wake. Sailboats equipped with hydrofoils have walked away from even fast motorboats.

The U. S. Navy has experimented with numerous foil shapes and hull designs, including the test boat *High Pockets,* below. Next year it will order a hydrofoil submarine chaser. Designed to patrol harbor approaches and coastal waters, the ship represents the first practical attempt to harness a hydrofoil system to a sizeable combat vessel. Other experiments seek to wed hydrofoils to landing craft.

Maritime officials, too, are keeping a weather eye on the foils. They say work should start soon on a prototype of a passenger vessel of about 100 tons which would transport 300 passengers across oceans at 60 to 70 knots. What the ship lacks in size it will make up in speed, its advocates say. In the time it takes the conventional steamship to make one round trip, the hydrofoil will "fly" across and back three times.

Eying this promising future, one expert predicts: "Shipbuilding is about to see the first real advance since steam took over from sail." A.P.M.

U. S. NAVY

UMI

Hydrofoils Give Boats Wings

LUIS MARDEN, NATIONAL GEOGRAPHIC STAFF

TO A PASSENGER coming aboard, the boat looks like the sleek, gold-and-white cruiser it is. Only the observant would notice the red hydrofoils protruding lobsterlike from the hull.

Underway, the craft moves into the harbor at Reggio Calabria, at the tip of Italy's boot. Once in the clear, the captain pours on the power. As it gathers speed, the boat seems to pull itself up by its bootstraps. Within 30 seconds it is sailing along like a great waterbug, supported only by its four foils.

Top speed of the *Arrow of the Sun* (above) is 43 knots (49 miles per hour). An Italian ferryboat, it makes the run across the Straits of Messina to Messina, Sicily, a distance of 8.1 miles, in 10.3 minutes. Ordinary ferries take 50 minutes.

The *Arrow* and her hydrofoil sisters apply the same principle to water that keeps aircraft aloft in the air. Like an aircraft wing, a hydrofoil deflects water around its surfaces, creating lift. The greater the speed, the more powerful the lift.

Almost unknown a few years ago, hydrofoil boats are quickly catching on. Two operate in Venezuela. One carries passengers from La Guaira (port for Caracas) to Margarita, a Caribbean island 12 miles offshore. Another performs taxi service on oil-rich Lake Maracaibo, hauling workers to petroleum rigs. Sight-seers on Lake Garda and Lake Maggiore, in northern Italy, watch the shore from glass-enclosed hydrofoil boats.

The Soviet Union expects to put its third hydrofoil into operation on the Volga River next spring. Dubbed the *Meteor*, the ship will carry 150 passengers from Gorki to Kuibyshev, a distance of 540 miles. Estimated time: 14 hours.

The attention being paid hydrofoils represents a late blooming of an idea long familiar to ship designers. The concept of a vessel whose hull would ride free of the water's drag has stirred the imagination of inventors since the turn of the century. An Italian, Enrico Forlanini, tested the first successful hydrofoil craft in 1905. Wilbur and Orville Wright tried out a foil-supported catamaran in 1907. These early efforts were brought to brilliant completion by Alexander Graham Bell, inventor of the telephone, in his *Hydrodrome No. 4* (below).

Bell died in 1922. Hydrofoil research languished until World War II rekindled interest. Germany produced a hydrofoil boat that would go 65 miles an hour, but had a tendency to capsize.

Lighter engines and lightweight metals

to the lower Rio Grande Valley. Not being able to read where he belonged, and little concerned with State lines, he traveled where opportunity beckoned and now happily snuffles his food in New Mexico, Arkansas, Mississippi, and Florida, where he was introduced.

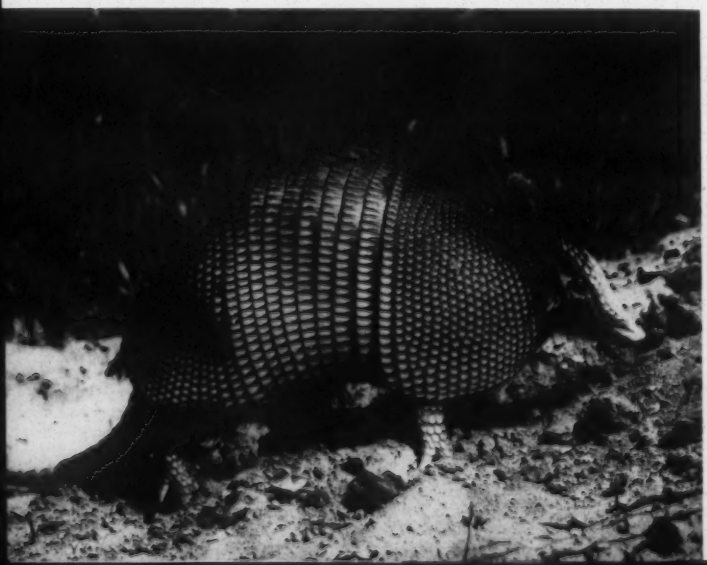
He dines mostly on such succulent fare as fire ants, roaches, tarantulas, and scorpions. He moves over his feeding grounds like a junior-grade juggernaut, with his piglike snout furrowing the earth, grunting with exertion and contentment. When a tasty morsel is unearthed, his sticky anteater tongue flicks out and pulls it in. His mouth has no teeth except for a few rudimentary molars in the back.

DON RATHLOU; LEONARD LEE RUE III, THREE LIONS, BELOW

He does most of his foraging at night but Mrs. Armadillo often feeds by day. Also, they sometimes eat animal and plant food in addition to crawling delicacies. When they must cross a small stream they walk on the bottom from shore to shore. In order to swim they overcome the weight of their armorplate by gulping air until the intestines fill—in effect making balloons of themselves.

Mr. and Mrs. Armadillo ordinarily choose shady cover of brush, cactus, and chaparral, but are adaptable enough that in their eastern range they prefer pine forests. They like limestone areas, and often nest in a natural limestone hole. Then again, they may dig their own burrow—a meandering tunnel not far below the surface.. It may extend 25 feet and have enlarged cavities for the grassy nests.

The babies are born with eyes open. They become active in a few hours. They nurse for about two months; mama has four breasts, so there is one for each of the quadruplets. Baby's skin is soft, but as he reaches adult size it hardens into the shell worn for life; thus each armadillo's armor is tailored to size. R.G.



ODD-BALL ANIMAL—Related to the anteater and sloth, the nine-banded armadillo—about the size of a big house cat—outdoes both as a "pecuriosity." A strange trait is that it always arrives in a litter of four. This is because the original cell, when fertilized, splits into quarters; thus each baby is not only of the same sex but is identical to its littermates in scale pattern and number of hairs.

UMI

Tall tale from Texas, the improbable . . .

Armadillo

HARALD SCHULTZ

IF ANIMALS published newspapers, here is a headline they would never print:

Mrs. Armadillo Gives Birth to Quadruplets!

It would be true, but it wouldn't be news. Nine-banded armadillos almost always give birth to four babies at a time. At right are littermates of a Brazilian species. Their young master wanted them for pets and rescued them from the family cooking fire.

Armadillos range from Argentina to Oklahoma. Until 90 years ago they appeared in the United States only along the Rio Grande in Texas. "There ain't no such animal!" might first have been said by a stranger suddenly sighting one. For indeed the armadillo looks like a Texas tall tale—by all odds our oddest mammal.

He has ears like a mule, a ridiculously small head like a vulture, tongue like an anteater, long claws like a bear, a tail like a rodent, and armor like a tank. Altogether he looks more like a pig than anything else—a pig in armor!

His head, back, legs, and tail are covered with a bony coat of mail that allows him to slip unscratched through the thorniest thickets of the dry scrublands he calls home. Strangely enough, he uses his armor in defense against other animals only as a last resort. His first line of defense is to run to a burrow (he may have several spotted around his hunting grounds) or, if caught off-base, to dig into the earth with long-clawed feet.

The armadillo lives only in North and South America and is found in several varieties and sizes—from five inches to five feet long. Most familiar of the species is the nine-banded armadillo *(dasypus novemcinctus)*, the only type that lives within United States borders. It reaches two and a half feet in length (including tail) and weighs 12 to 15 pounds. The nine bands of armor that cover its back telescope over one another. Other varieties have more or fewer bands.

When the Spanish conquerors of Mexico—wearers of armor themselves—first beheld the unbelievable creatures they called them "little fellows in armor"—armadillos. They saw Indians cleaning them, as in the picture below, and eating the porklike meat.

These nine-banded border jumpers are still called "poor man's pig" in Texas. But evidently man is not as dangerous to the armadillo as are its natural enemies. For, as civilization advanced, so did this quadruped Don Quixote. He traveled well ahead of his press notices, establishing a range in the 1920's that covered most of Texas and parts of Oklahoma and Louisiana while textbooks and mammal guides were still limiting him

and men. The once valueless wasteland, the enemy of man, becomes man's servant.

The wedding of France and Algeria has not resulted in a blend of the two regions. Both elements cling to their distinctive cultures. In the capital city of Algiers, the European quarter is as French as France itself, with wide boulevards, modern buildings—like those in the picture above—kiosks, and cafés. In the Old World Moslem section, Arabs hang on to their separateness. The old fortress that earned the famous Casbah its name dominates cube-shaped, flat-roofed houses with heavy, carved wooden doors, winding streets, and open-air markets. Below, the market place of Biskra, a desert oasis, displays its blood oranges and red peppers beneath swaying palms.

Foreign domination is an old story to Algerians. Phoenicians founded trading centers along Algeria's coast more than 2,000 years ago. Later Carthaginians, Romans, and Vandals gained footholds. In the 7th century, Arabs integrated Algeria into their empire and converted the inhabitants from Christianity to Islam. In the 16th century Turks occupied Algiers. For three centuries the city sheltered Barbary pirates who preyed on Mediterranean shipping. After many nations had weakened the power of the marauders, France finally crushed them, capturing Algiers in 1830. By 1848 the French controlled the coastal area and absorbed it into France. The Saharan regions remained colonies until 1958 when they, too, were made departments of France.

Following French occupation of Algeria, thousands of settlers crossed the Mediterranean to manage farms and go into business. Roads, hospitals, schools, and factories were built. France shoved Algerians into the modern world at a fast pace.

Modern medicine dramatically reduced the death rate, but it also helped increase an already high birth rate. The population skyrocketed, swallowing up the benefits of increased production. The numbers of jobless and homeless mushroomed. Many Algerians found themselves poorer than ever.

MAYNARD OWEN WILLIAMS

Only about one-tenth of Algeria's people are of European origin. The rest are a mixture of Arabs and Berbers. Yet Europeans farm most of the best land, hold the highest government positions, and control 90 per cent of the money.

It is to end this lopsidedness that the rebels are fighting. They were encouraged when their neighbors, Morocco and Tunisia, were given independence by France in 1956. France believes Algeria is not yet equipped for sovereignty, economically or politically. Nor does France want to give up her rights to the oil reserves in the Sahara.

Peace seems a little closer now as Algerians and French prepare to talk out their problems. L.B.

UMI

SERGIO LARRAIN, MAGNUM

Five-Year War Wastes Algeria

FRENCHMEN sip coffee in a café off the modern Algiers street at left. A veiled woman walks softly by. All is calm. Suddenly a white-robed *fellagha* appears, puts a bullet through one of the men. The assassin flees to the native quarter, disappearing in its twistings and turnings.

This is the terror that stalks Algeria, that has gripped it since November 1954, when Moslem Nationalists *(fellaghas)* first fired on the French. French and Moslem extremists keep the country under constant tension. Since Algerians friendly to the French, or neutral, are frequently targets of the *fellaghas,* the strife is almost as much a civil war as a rebellion.

No one knows when a time bomb will go off in a restaurant or a grenade shatter the glass of a store window. Streetcars wear iron grilles at their windows to discourage grenade throwers.

In the country the farms of the French *colons*—settlers—are equipped with radios to send an SOS to a French army outpost in case of attack. French farmers arm themselves in the fields by day, barricade themselves inside fortified farmhouses by night.

The Nationalists wage war on their own terms—a throat cut here, a kidnaping there. Time after time French units, which outnumber the rebel force 25 to 1, have closed in on a Nationalist concentration, only to see it disappear into the wild hills.

The *colons,* with most to lose if Algeria gains independence, also have been guilty of armed outrages against the native patriots. They own some of the most productive land and naturally dislike the thought of losing it.

The two factions are fighting for a big and potentially rich but still undeveloped country. Its 920,000 square miles make it more than four times the size of mainland France. Most of Algeria's 10,600,000 people live in the Tell, a fertile strip paralleling the coast. They work farmlands lush with vineyards, olive, fig, and orange groves. To the south rise the Atlas Mountains, home of tribesmen whose goats, sheep, and camels forage for alfalfa and esparto grass on windy, high plateaus. Farther inland sprawls Algeria's empty quarter—the bleak territories of the Algerian Sahara that covers an expanse three times greater than Texas.

This land is still relatively undeveloped. Much oil and other mineral wealth await exploitation. One oil pool alone has an estimated content of 300,000,000 tons—15 times as much as France uses yearly. Geologists say there is much more beneath Saharan sands. Suddenly the Sahara has awakened, alive with derricks, jeeps, drills,

Veiled Men of the Desert

Terror of another kind once stalked desert caravans traveling the blazing Sahara. Fierce warriors in blue veils swept over the sands on white camels, raiding, killing, and enslaving Arab caravaneers. The Tuareg "Blue Men" ruled the desert until the French came to the Sahara.

Now these men of proud Berber descent depend on their lowly herds of sheep, moving from pasture to pasture near the remote oasis of Tamanrasset.

Unlike Moslems elsewhere in Algeria it's the Tuareg male who wears the veil. His white turban leaves only the eyes uncovered.

The women, with faces for all to see, are strikingly handsome, with almost white skin.

PHOTOGRAPHS BY GEORGE RODGER, MAGNUM

They also wear blue, draped as hoods instead of veils. Tuareg women enjoy more freedom and respect than do their Arab sisters. They may choose husbands, hold property, teach, and serve as heads of camp. The old woman above, for instance, rules her encampment. As in many African areas, Tuareg society is matriarchal, with power and lineage tracing through women rather than men.

There are two distinct classes among Tuaregs—nobles, who do no work, and vassals, who serve them. Status is fixed for life. However, if a vassal man marries a noble woman, the children are noble. In the reverse case, the children are vassals.

The long leather whip of the rider at left is his mark of nobility. K.C.

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